

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 05-152878

(43)Date of publication of application : 18.06.1993

(51)Int.Cl.

H03H 3/02

(21)Application number : 03-314555

(71)Applicant : SHOWA SHINKU-KK

(22)Date of filing : 28.11.1991

(72)Inventor : TAKAHASHI OSAMU

II TORU

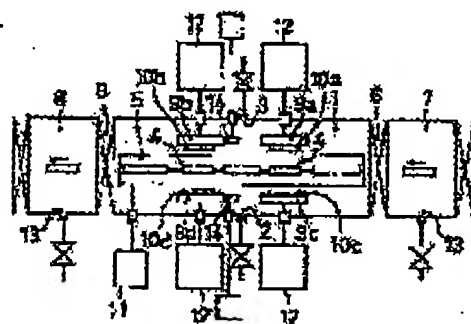
HAMASHIMA KAZUHIKO

(54) ELECTRODE FILM FORMING DEVICE FOR CRYSTAL OSCILLATOR

(57)Abstract:

PURPOSE: To obtain the device by which electrodes of two layers or over are formed at once to both sides of a crystal substrate by providing a sputter cathode having a material for plural crystal oscillator use electrode films to both sides of a moving path of the substrate respectively.

CONSTITUTION: A vacuum exhaust 2 and an intake 3 for an inactive gas such as an Ar gas are provided to a vacuum chamber 1 formed lengthwise, and a moving device 5 moving a crystal substrate 4 comprising an endless belt for a conveyor or a chain belt or the like is provided longitudinally under the vacuum chamber 1 in the lengthwise direction. The moving device 5 is driven by a drive mechanism 11. Plural sputter cathodes 9a, 9b, 9c, 9d are provided to both sides of the moving path through which the moving device 5 passes while the sputter faces are opposite to each other. Targets 10a, 10b, 10c, 10d made of materials for the electrode film for the crystal oscillator are fitted to the front face of each sputter cathode. Different materials are used for the targets 10a, 10b, 10c, 10d. Then multi-layer electrode



films are formed at once to both sides of the crystal substrate.

LEGAL STATUS

[Date of request for examination] 29.06.1998

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 3261504

[Date of registration] 21.12.2001

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office